

CLAIMS:

1. Apparatus for use in surgery comprising a sleeve having an entry opening at an outer end thereof and an exit opening at an inner end thereof to access a patient's body, exit sealing means being provided for sealing the exit opening to a body and entry sealing means being provided for sealing the outer entry against an arm passing therethrough to create a controlled environment within the sleeve.
2. Apparatus as claimed in Claim 1 wherein the sleeve is of a flexible material.
3. Apparatus as claimed in Claim 1 or 2 wherein the sleeve is of a gas-impermeable material to create controlled pressurised environment within the sleeve.
4. Apparatus as claimed in any preceding claim wherein the sleeve comprises a generally cylindrical body closed at one end thereof and an exit opening is provided in a side wall of a body adjacent the closed end.
5. Apparatus as claimed in any preceding claim wherein the exit sealing means comprises a flange around the exit for sealing against the body of a patient.
6. Apparatus as claimed in Claim 5 wherein the flange is provided with an adhesive for adhering to the body.

- 16 -

7. Apparatus as claimed in Claim 5 or 6 wherein the exit and flange are covered by a peel-off cover.
8. Apparatus as claimed in Claim 5 wherein the flange is engaged with a mounting ring surrounding an incision in a patient's body.
9. Apparatus as claimed in any preceding claim wherein the entry sealing means comprises a valve means through which a surgeon passes an arm.
10. Apparatus as claimed in Claim 9 wherein the valve means is of a material which is sufficiently flexible to allow an arm to be passed therethrough and to seal against the arm when passed therethrough.
11. Apparatus as claimed in Claim 9 wherein the valve means comprises a first mounting in the sleeve entry, a second mounting and a sealing body of flexible material extending between the mountings, one of the mountings being twisted relative to the other to twist the sealing body into engagement with an arm passing therethrough.
12. Apparatus as claimed in Claim 11 wherein fixing means are provided for fixing one mounting relative to the other in the sealing position.
13. Apparatus as claimed in Claim 12 wherein the fixing means comprises inter-engaging formations provided on the mountings.
14. Apparatus as claimed in any of Claims 11 to 13 wherein the first mounting comprises a ring mounted in the sleeve at the entry thereof.

- 17 -

15. Apparatus as claimed in Claim 14 wherein the second mounting comprises a ring to which the sealing material is attached.

16. 5 Apparatus as claimed in any of Claims 1 to 8 wherein the entry sealing means comprises a first sealing element provided in the entry and a second sealing entry provided on a surgical glove, the sealing elements inter-engaging to seal the sleeve on passing of the glove through the entry.

10 17. An apparatus as claimed in claim 1, wherein said sleeve includes at least one additional entry opening which permits another arm or an instrument to be passed into the sleeve while said entry opening has an arm positioned therein.

18. An apparatus as claimed in claim 1, wherein said 15 sleeve is provided with a sealing cuff disposed between said entry and exit openings for substantially sealing the sleeve when said entry opening is in an open condition.

19. An apparatus for being secured to a patient's body to provide a sealed passage into the interior of the body, the 20 apparatus permitting the arm or fingers of a physician to be passed therethrough, said apparatus comprising:

a sleeve member having first and second ends, an entry opening formed in said first end and an exit opening formed in said second end;

25 said first end having sealing means adjacent said entry opening for substantially sealing the first end against the physician's arm when a portion of the arm is positioned in an interior of said sleeve; and

said second end having attachment means for attaching the second end of said sleeve to said body with said exit opening being positioned adjacent an incision formed in said body, said attachment means being capable of substantially sealing said 5 second end to said body;

whereby said apparatus is attachable to said body with the exit opening adjacent said incision, and the physician's arm can be positioned in said sleeve with the entry opening substantially sealed therearound such that the apparatus 10 provides passage into the interior of the body to permit the surgeon to reach into said interior of the body to perform a surgical procedure.

20. A method of performing a minimally invasive medical procedure utilizing an apparatus which permits at least a portion of a physician's hand to pass into a patient's body 15 through an incision in the body, the method comprising the steps of:

- (a) making an incision in the patient's body;
- (b) providing an apparatus in the form of a sleeve 20 having opposite ends and an opening in each of said ends, one of said ends configured for attachment to the body and an other of said ends configured for receiving a portion of the physician's arm;
- (c) attaching said one end of the sleeve to the body so 25 as to surround the incision with said one end in substantially sealing contact against the body;

(d) the physician passing said hand and arm portion through said other end of the sleeve with said other end in substantially sealing contact against said arm portion; and

5 (e) the physician inserting said hand through the incision and into the interior of said body to perform a medical procedure.

21. A valve comprising an outer ring and a sealing sleeve of flexible material mounted to the ring and extending into the opening defined by the ring to terminate in a substantially centrally disposed

10 inlet opening through which a member such as a trocar or surgical instrument may be passed, the sealing body remaining in sealing engagement with the member as it is passed therethrough.

15 22. A valve as claimed in Claim 2 wherein the sealing body is twisted into a substantially hourglass shape having a central opening through which a member is passed.

20 23. A valve as claimed in Claim 1 or 2 wherein the ring comprises a pair of axially facing ring parts, opposite free ends of the flexible sealing sleeve being attached to the respective ring parts, one of the ring parts being rotated relative to the other to twist the sealing sleeve into a twisted sealing configuration and fixed relative to the other ring part in the sealing configuration.

25 24. A trocar tube or cannula incorporating a valve as claimed in any preceding claims 21 to 23.